

# PBL Integrated Unit of Study

Grade Level 6-8 Teachers Mr. Padilla  
 Subject Areas Middle School Science

## Part I. Identify Desired Results (Enduring Understandings)

- What is the overarching driving question? Sub-Questions

Unit sub-questions: How does science help us discover the world? How are different forms of energy transformed and observed?

- What standards will be addressed?

What will students need to know? Content	What will students be able to do? Skills and Processes
<b>Science</b>  5.1. A.1. Evaluate the strengths and weaknesses of data, claims, and arguments  5.1. B.1. Identify questions and make predictions that can be addressed by conducting investigations.  5.3.D.4 Use computer spreadsheets, graphing and database applications to assist in quantitative analysis of data  5.4. B. 1 Compare and contrast science with technology, illustrating similarities and differences between these two human endeavors.  5.7. B.1 Recognize that the sun is a major source of the Earth's energy and that solar energy includes visible, infrared and, ultraviolet radiation.  5.7. B.2. Describe the nature of various forms of energy, including heat, light, sound, chemical, mechanical, and electrical and trace energy transformations from one form to another.  5.7.B.3 Describe how heat can be conducted through materials or transferred across space by radiation and know that if the material is a fluid, convection currents may aid the transfer of heat.  5.7. B.4. Show that light is reflected, refracted, or absorbed when it interacts with matter and that colors may appear as a result of this interaction.	<b>Language Arts</b>  3.1.H.1 Produce written and oral work that demonstrates comprehension of informational materials. 3.1.H.5 Self-select materials appropriately related to a research project.  <b>Technology</b> 8.1.8.A.8. Design and produce a basic multimedia project 8.1.B.6.Choose appropriate tools and information resources to support research and solve real world problems, including but not limited to: On-line resources and databases and Search engines and subject directories 8.1.B.8. Use computer applications to modify information independently and/or collaboratively to solve problems.

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- **What overarching enduring understandings are desired as a result of this unit?**

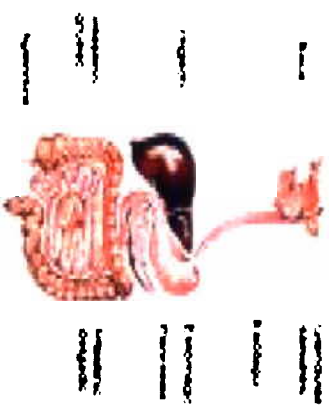
- Students will develop an understanding what science is and how the scientific process works.
- Exploring science, students will describe how energy, work and power are related.
- Students will “think like a scientist” by understanding how different forms of energy are observed in daily life routines.
- Utilizing the scientific process, by writing a research paper and presenting their comprehension of energy through a creative presentation.
- The presentations will emphasis the scientific method as well as incorporate different technological tools.

## **Part II. Determine Acceptable Evidence (Description of Project)**

- **What evidence will show that students understand? Describe the performance tasks or prompts and other evidence that indicate students are able to respond to the driving question.** *(Consider the following: the content areas that are integrated, the type of higher level thinking this project requires; how the assignment is connected to the background of the students, and its real world application.)*

### ***Student's will perform the following task:***

- **Use Scientific Process-question, hypothesize, experiment, observe and analyze natural phenomena.**
- **Use a variety of measuring instruments when investigating and conducting experiment.**
- **Design a project that educates the Jersey City community of how different forms of energy are used during daily activities that take place in their daily lives.**
- **Compile 10-12 pictures of people in common everyday situations using at least four forms of energy.**
- **Write a 3 page research paper that explains the law of conservation through the various illustrations prior to presentation.**
- **Create and record a skit that represents at least 4 forms of energy.**
- **The recording must include examples of potential and kinetic energy.**
- **Edit and enhance their video to best fit the needs of their presentation.**

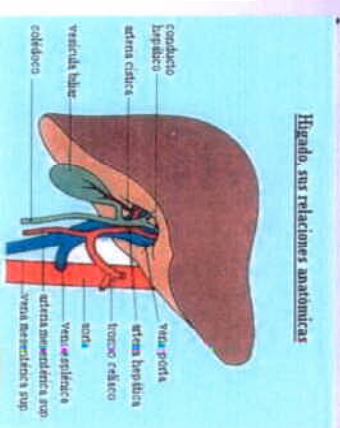
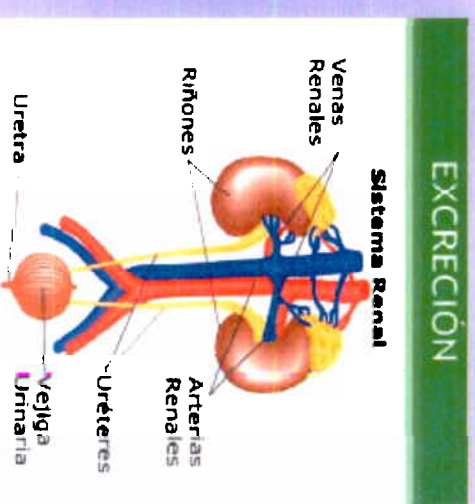


La excreción es además, un sistema regulador del medio interno, es decir, determina la cantidad de agua y de sales que hay en el organismo en cada momento, y expulsa el exceso de ellas de modo que se mantenga constante la composición química y el volumen del medio interno (**homeostasis**). Así es como los organismos vivos aseguran su superviven-

**Dr. Michael Conti** school

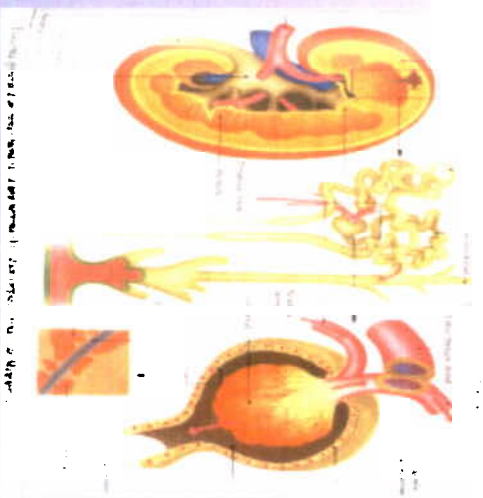
**Estudiante**

**Yarlaris Rodriguez,  
Dilenia Rodriguez,**



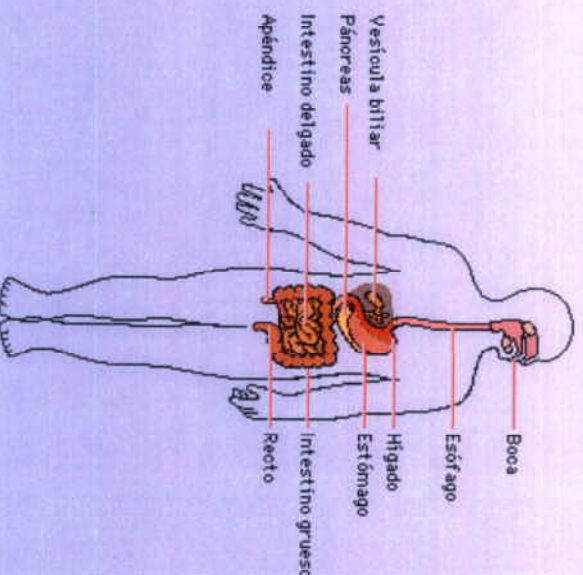
## ¿Que es el sistema excretor?

La estructura del sistema excretor encargadas de eliminar urea, agua y otros desechos son riñones, uretes, vejiga, y uretra. También esta el nefron que hace que la sangre fluya.



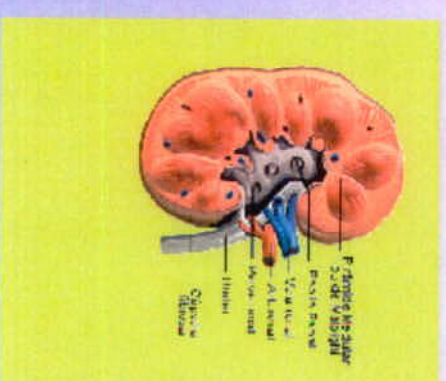
La excreción es la eliminación de los residuos tóxicos que producen las células de nuestro cuerpo. En este sentido, también los **pulmones** son, al igual que los dos riñones, importantes órganos excretorios, ya que eliminan un residuo tóxico, el  $\text{CO}_2$  (dióxido de carbono).

La sangre transporta otros residuos tóxicos distintos al  $\text{CO}_2$  hasta los **riñones** y éstos los concentran hasta



**Cuales son los órganos que trabajan en este sistema?**

Los órganos que **trabajan** en este sistema son el riñón, el ureter, la vejiga, la uriniaria y la uretra. También esta el nefron. La sangre fluye de una arteria hacia un nefron del riñón.



### NEWS TEAM

MTV is having a Science news contest covering energy transformations. They will select one (5 member) team to host a teen news show that will be broadcast throughout Jersey City Public Schools District on a weekly basis. You are interested in auditioning for this contest. You must select one of the following roles and as a NEWSTEAM report on energy transformations on the stories you choose to present.

CATEGORIES/ROLE	EXAMPLES
Weather	Examples: Thunderstorm, lightning, tornadoes, hurricanes....
	Examples of Energy forms: Electrical, Heat, Light, and Sound
Sports	Examples: Basketball, Soccer, Skiing, Baseball, Swimming....
	Examples of Energy Forms: Mechanical, Chemical, Kinetic, Potential...
Entertainment	Example: Music, Dance, Art...
	Examples: Sounds, Light, Mechanical...
Anchor Introduce Newsteam members and breaking story	Breaking news story
On field/on site reporters Choose independent story.	Example: opening of new nuclear power plant. Any current events story.

FORMS OF ENERGY
HEAT
LIGHT
SOUND
CHEMICAL
MECHANICAL
ELECTRICAL
POTENTIAL
KINETIC
NUCLEAR

## *Rubric for*

## *Newscast Team Report*

	Novice	Apprentice	Practitioner	Expert
<b>TEAM ORGANIZATION</b>	<p>Missing 2 of the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Team Logo</li> <li><input type="checkbox"/> Team Name</li> <li><input type="checkbox"/> News team member names.</li> </ul> <ul style="list-style-type: none"> <li><input type="checkbox"/> Shows no transition from one reporter to another.</li> <li><input type="checkbox"/> Discussed the 1 to 4 forms of Energy.</li> </ul>	<p>Missing one of the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Team Logo</li> <li><input type="checkbox"/> Team Name</li> <li><input type="checkbox"/> News team member names.</li> </ul> <ul style="list-style-type: none"> <li><input type="checkbox"/> Shows 3 transitions from one reporter to another.</li> <li><input type="checkbox"/> Discussed the 7 forms of Energy.</li> </ul>	<p>Contains the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Team Logo</li> <li><input type="checkbox"/> Team Name</li> <li><input type="checkbox"/> News team member names.</li> </ul> <ul style="list-style-type: none"> <li><input type="checkbox"/> Shows 5 transitions from one reporter to another.</li> <li><input type="checkbox"/> Discussed the 9 forms of Energy.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> All of the practitioner plus outreach to a local news company for additional information and resources.</li> </ul>
<b>News Content</b>	<p>Discussed 1 forms of energy in their presentation</p>	<p>Discussed 2 forms of energy in their presentation Discussed 1 form of energy transformations in individual news report</p>	<p>Discussed 3 forms of energy in their presentation. Discussed 1 form of energy transformations in individual news report=(total of 5 for group)</p>	<p>All of practitioner plus report on renewable energy resources.</p>
<b>Visual Effects and Illustration</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Less than 3 pictures in the Power-point presentation</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 3 pictures in the Power-point presentation</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 5 pictures in the Power-point presentation</li> <li><input type="checkbox"/> Each graphic is applicable to the content of topic</li> </ul>	<p>All of Practitioner <i>plus</i>: At least 1 picture per energy form. Edit Video on Widows Movie-maker</p>

## Sounds Effect in Movie

<p><b>ORAL PRESENTATION</b></p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Little evidence of preparation</li> <li><input type="checkbox"/> Mispronounces 3 or more words</li> <li><input type="checkbox"/> Prevents other student from focusing on peer presentations</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Mispronounces no more than 2 words</li> <li><input type="checkbox"/> Under or over assigned allotted presentation time.</li> <li><input type="checkbox"/> VOICE not projected.</li> <li><input type="checkbox"/> Appears distracted during other peers presentation</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Clear pronunciation.</li> <li><input type="checkbox"/> 7-10 minute presentations</li> <li><input type="checkbox"/> Consistent eye contact with the audience</li> <li><input type="checkbox"/> VOICE Projection</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> No Note cards used</li> <li><input type="checkbox"/> Involves peers in presentation</li> <li><input type="checkbox"/> Captures audiences attention through body language, eye contact, and creative presentation</li> <li><input type="checkbox"/> Thought provoking comments and questions addressed</li> </ul>
<p><b>WRITTEN REFLECTION REPORT</b></p>	<p>1 written page containing the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Role and specific contribution to the group.</li> </ul>	<p>1 written page containing the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Role and specific contribution to the group.</li> <li><input type="checkbox"/> Discussion of the 2 types of energy presented in their broadcast.</li> </ul>	<p>1 written/typed page containing the following:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Role and specific contribution to the group.</li> <li><input type="checkbox"/> Discussion of the three types of energy presented in their broadcast.</li> <li><input type="checkbox"/> Discuss their energy transformation.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> All of practitioner plus discussion of renewable energy.</li> <li><input type="checkbox"/> Include discussion on the law of conservation of energy relative to their energy transformation.</li> </ul>